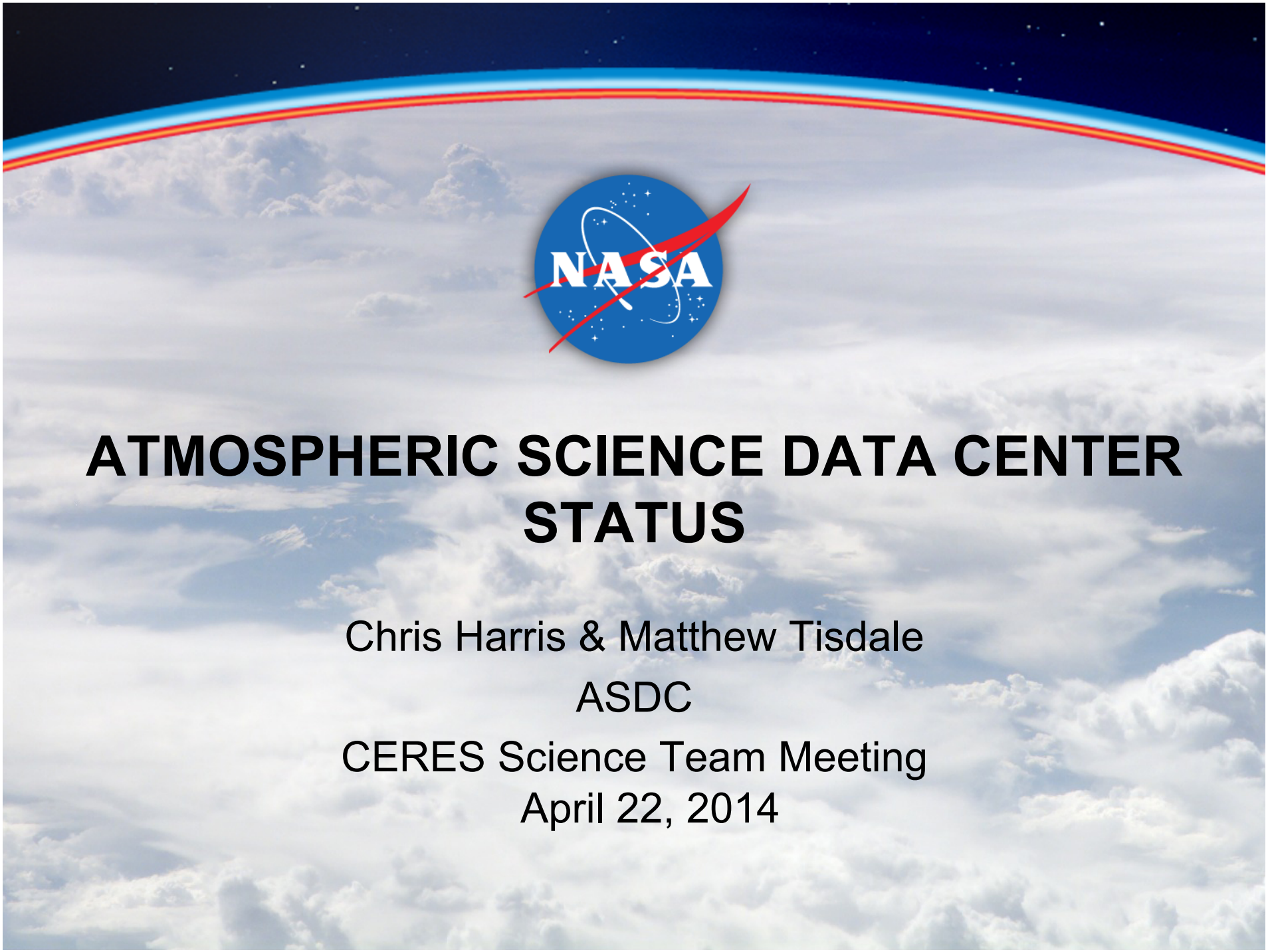


ATMOSPHERIC SCIENCE DATA CENTER STATUS

Chris Harris & Matthew Tisdale

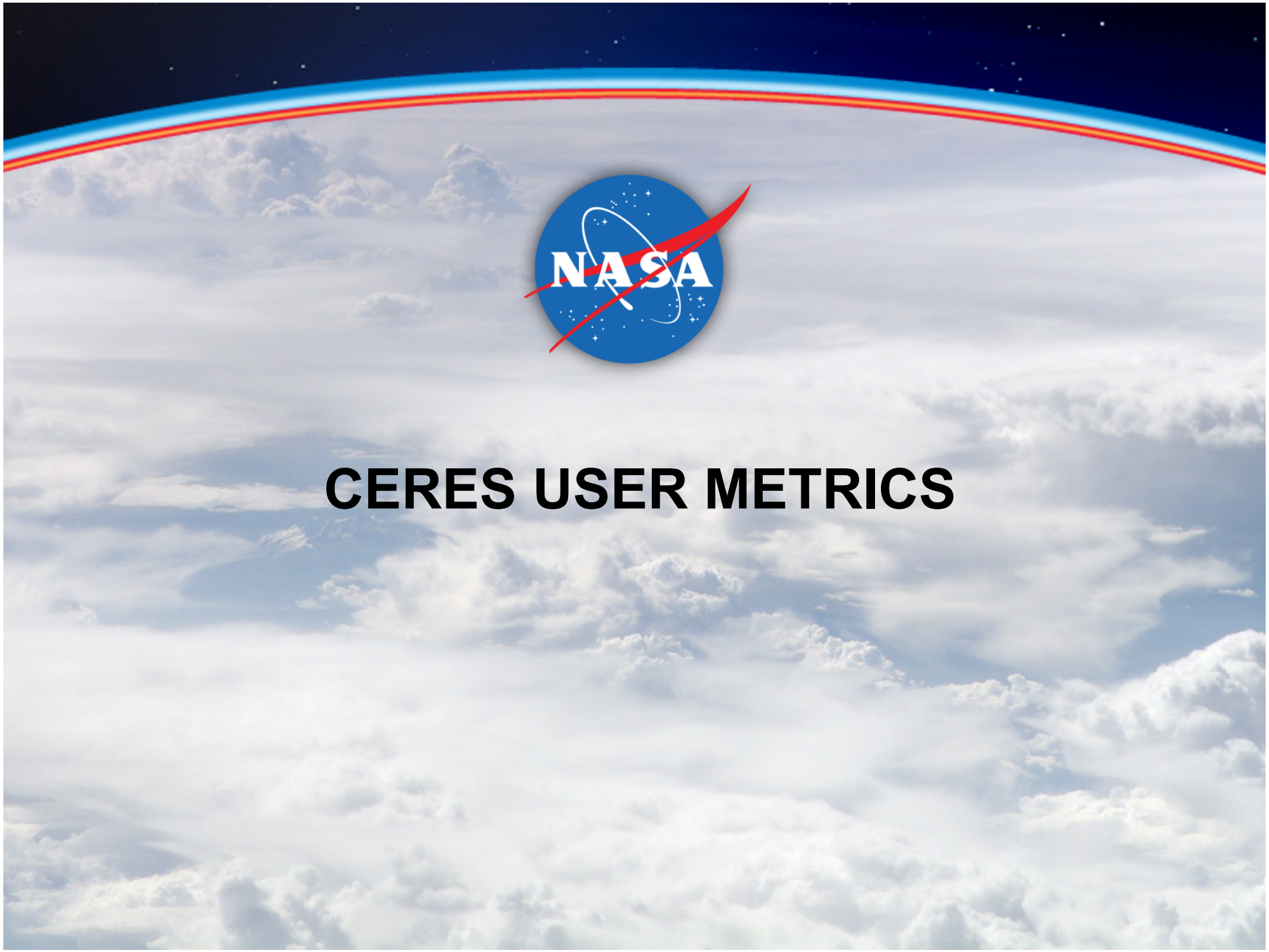
ASDC

CERES Science Team Meeting

April 22, 2014

Outline

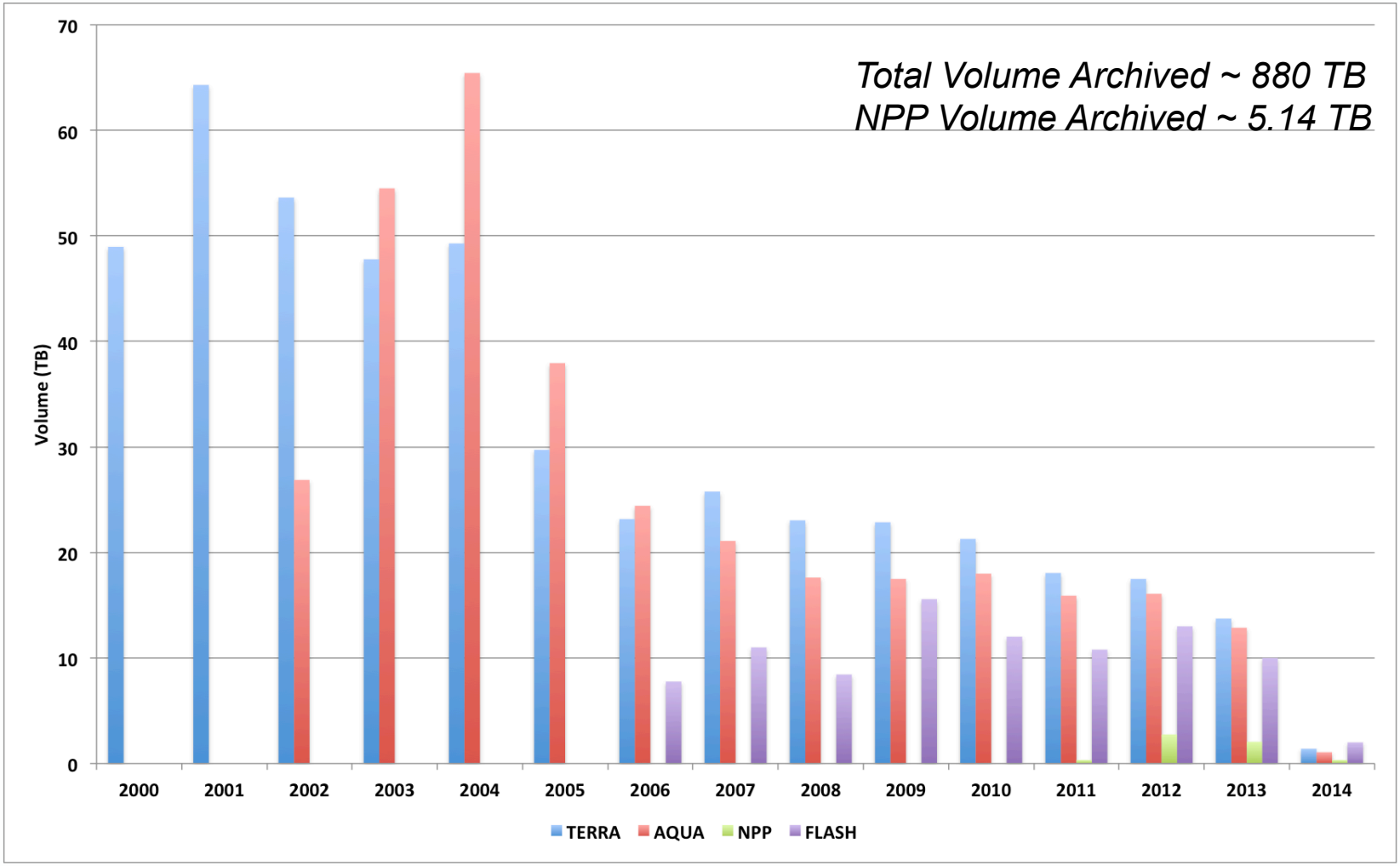
- CERES User Metrics
- ASDC EOSWEB Update
- Data Products Online (DPO)
- New IBM Hardware
- Advanced Architecture & Engineering (AAE)



CERES USER METRICS

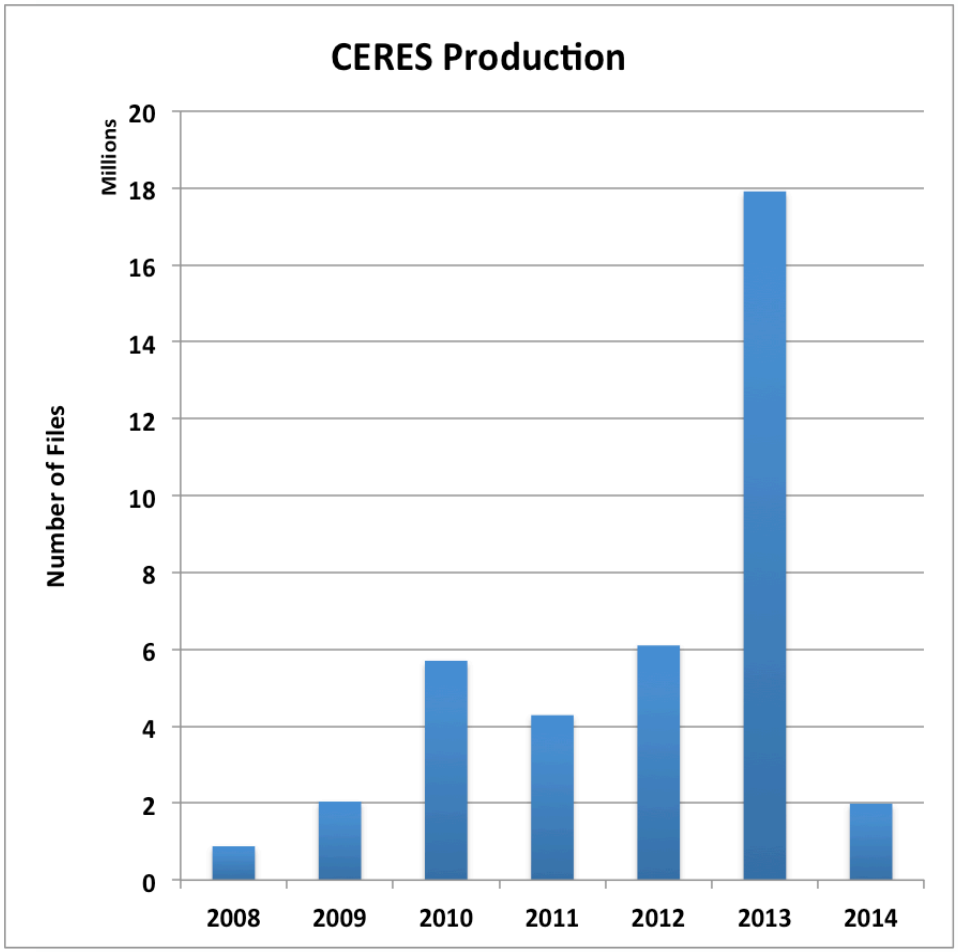
CERES and FLASHFlux Archive Volume

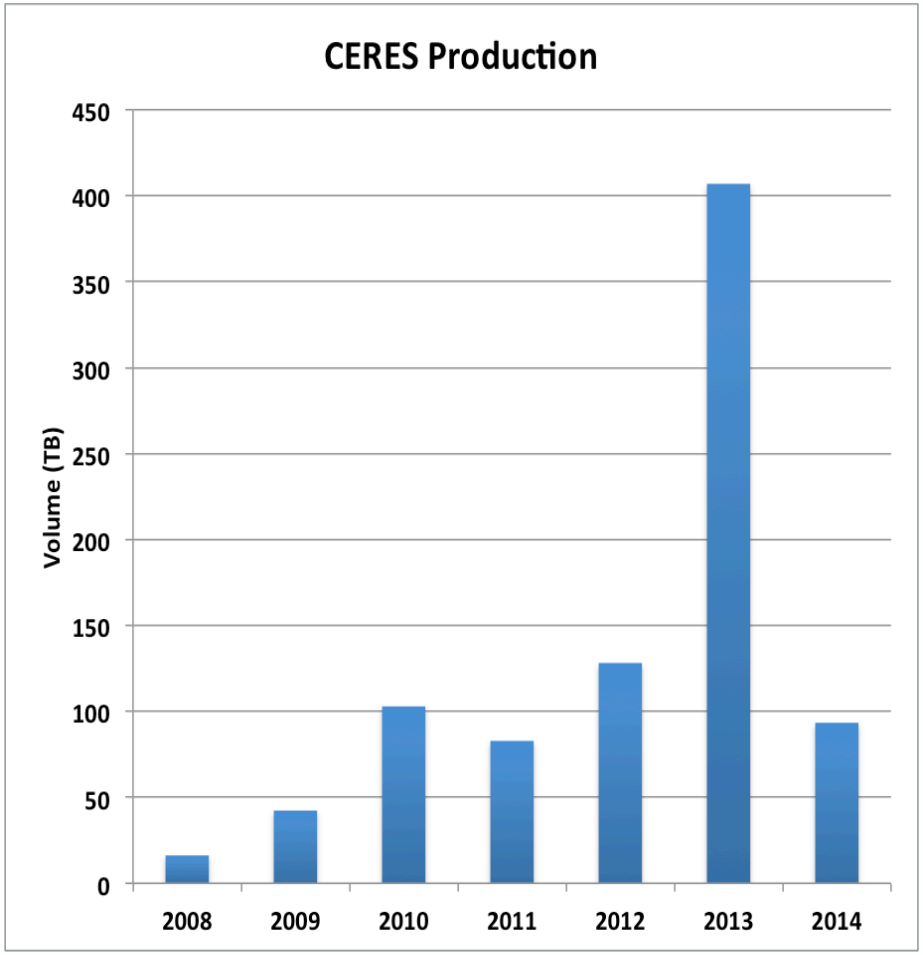
By Data Date Through March 2014



CERES Data Archived

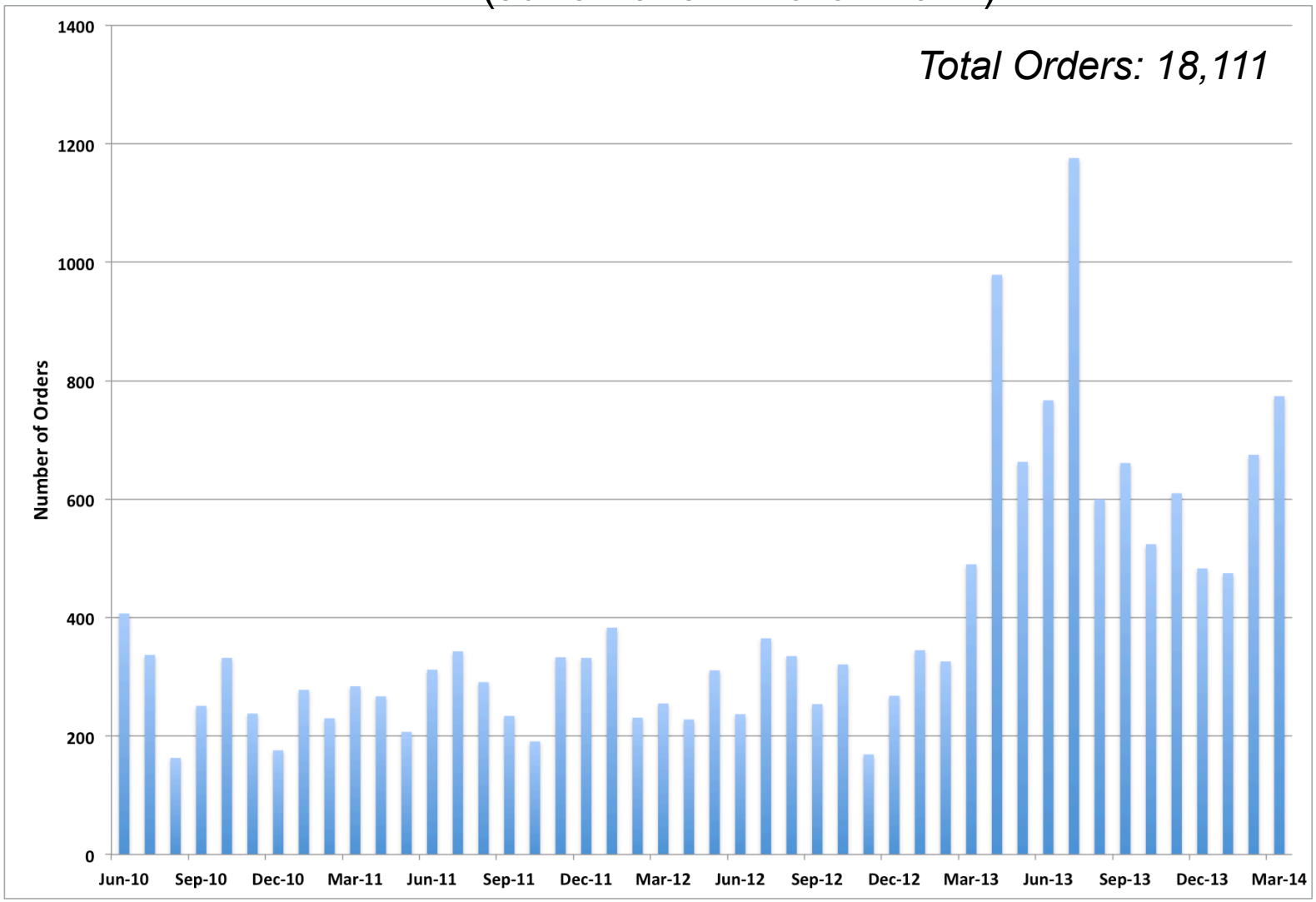
(September 2008 – March 2014)





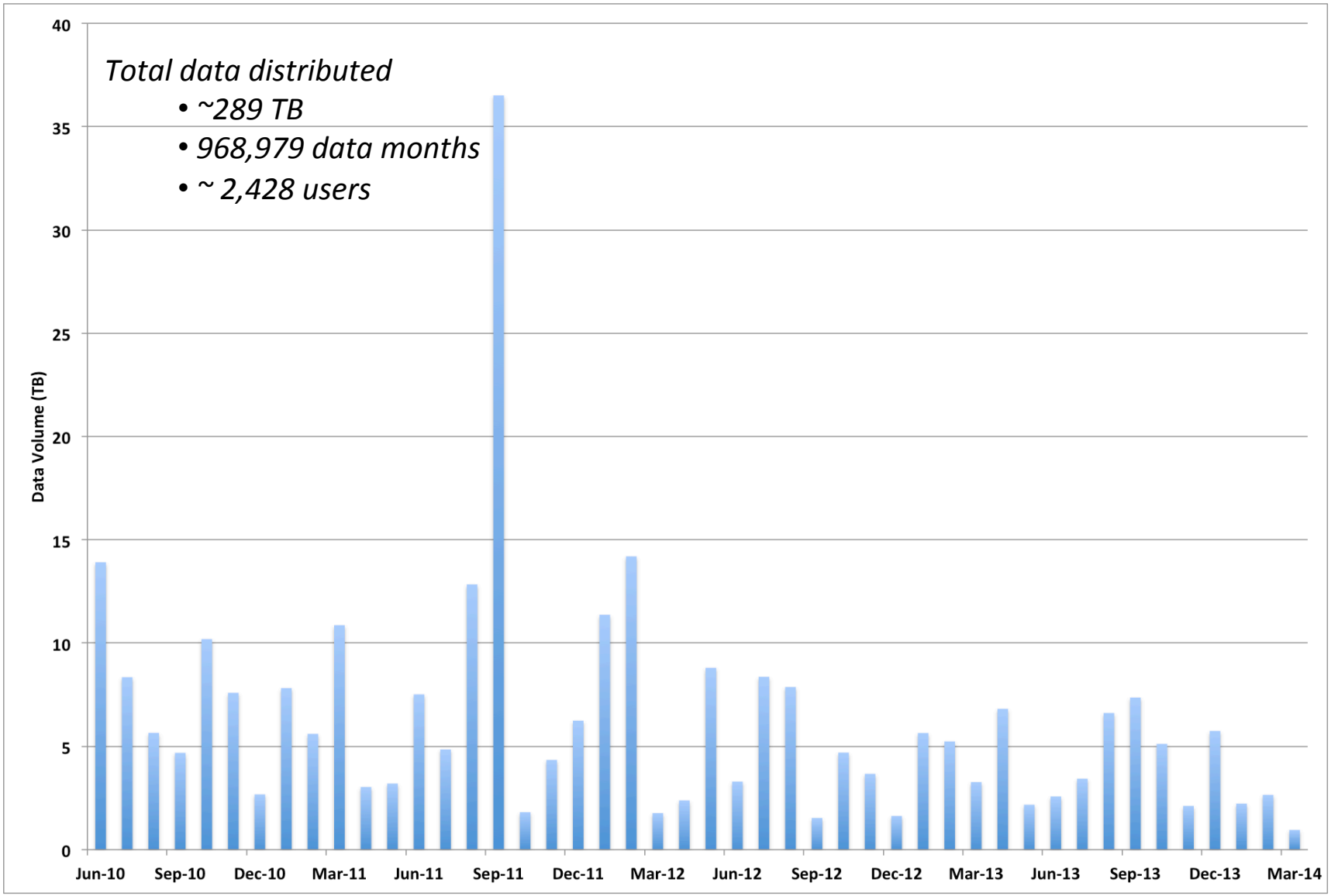
CERES Data Orders

(June 2010 – March 2014)



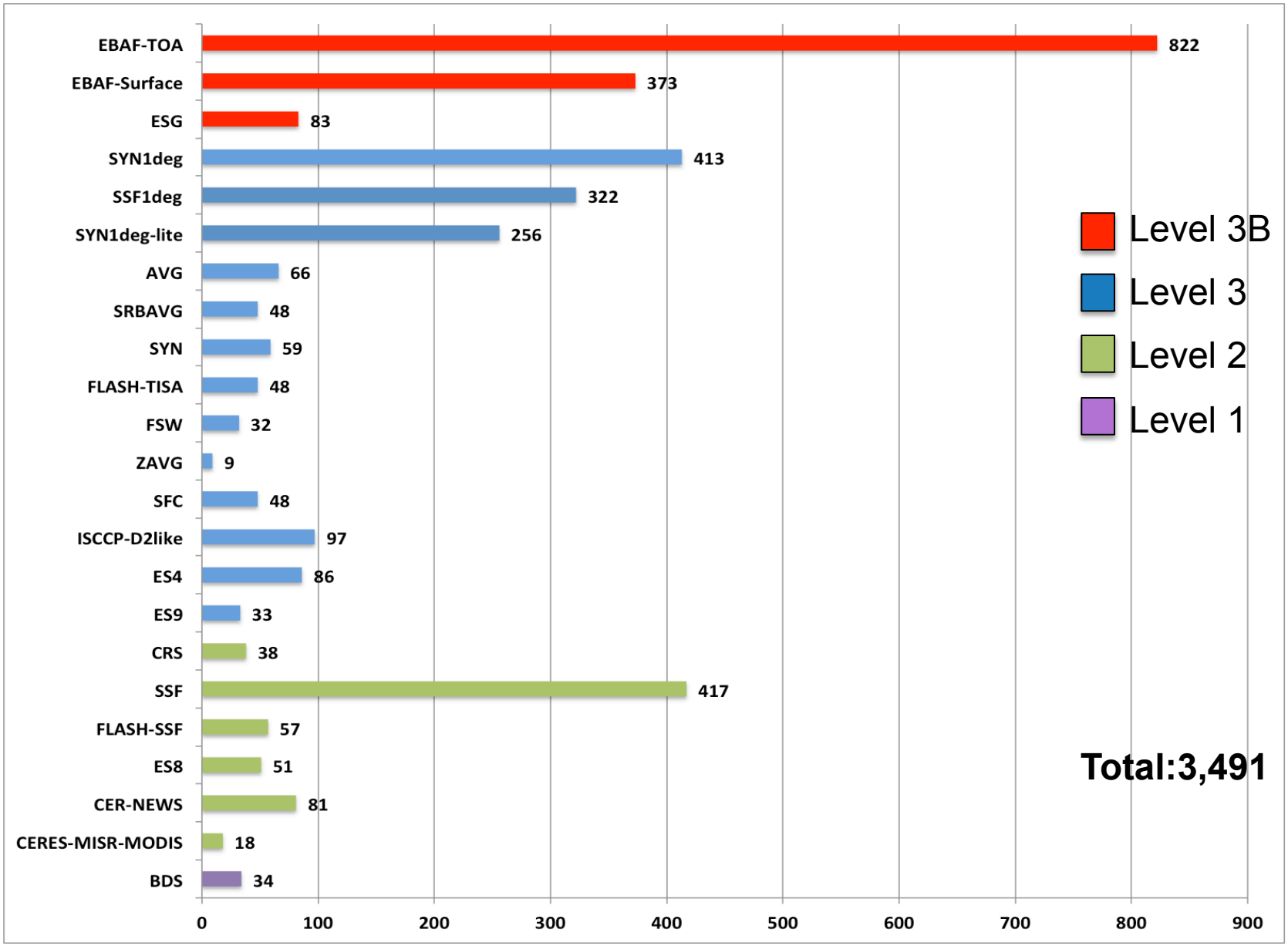
CERES Data Distribution

(June 2010 – March 2014)

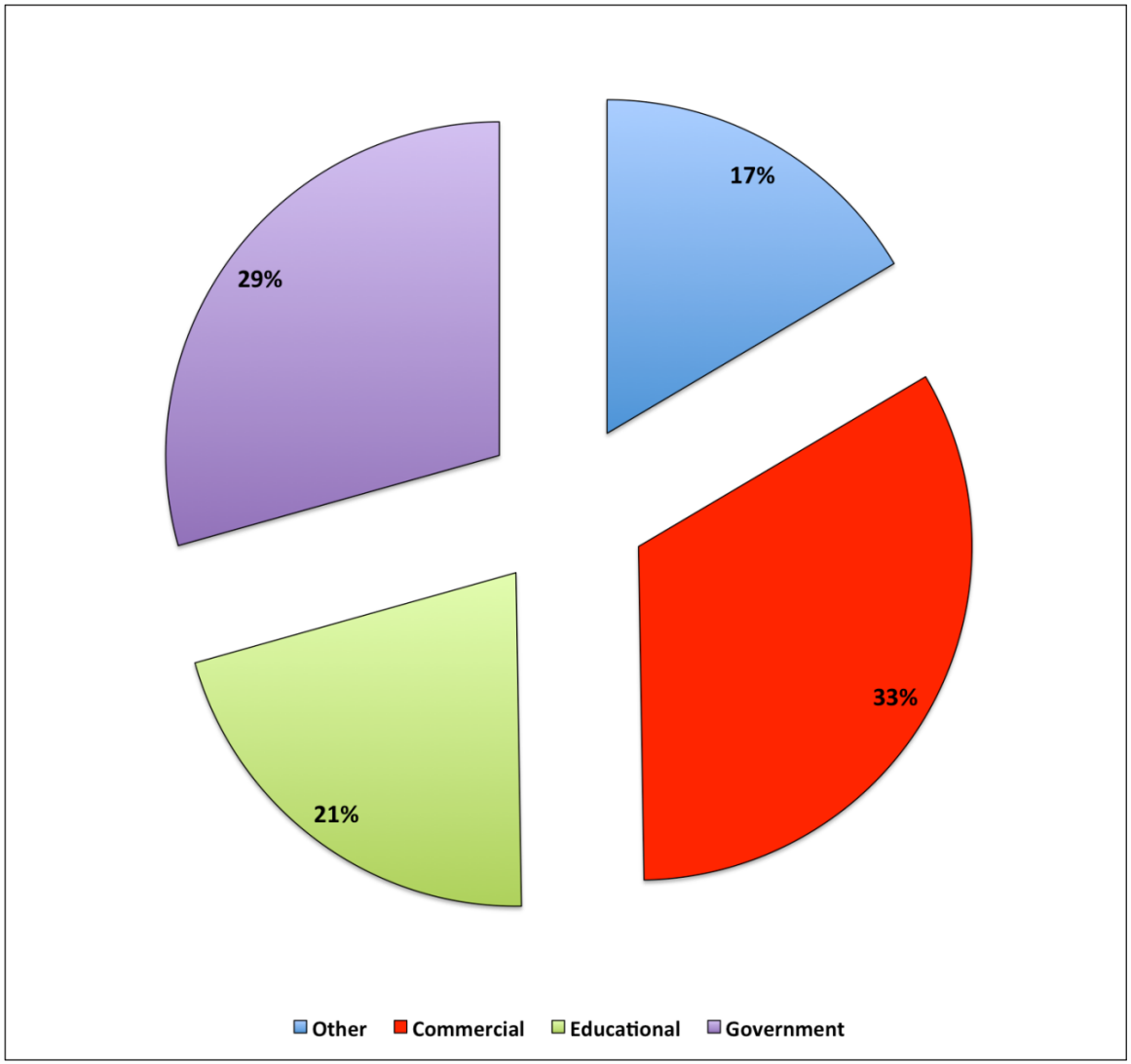


Number of Users by Product

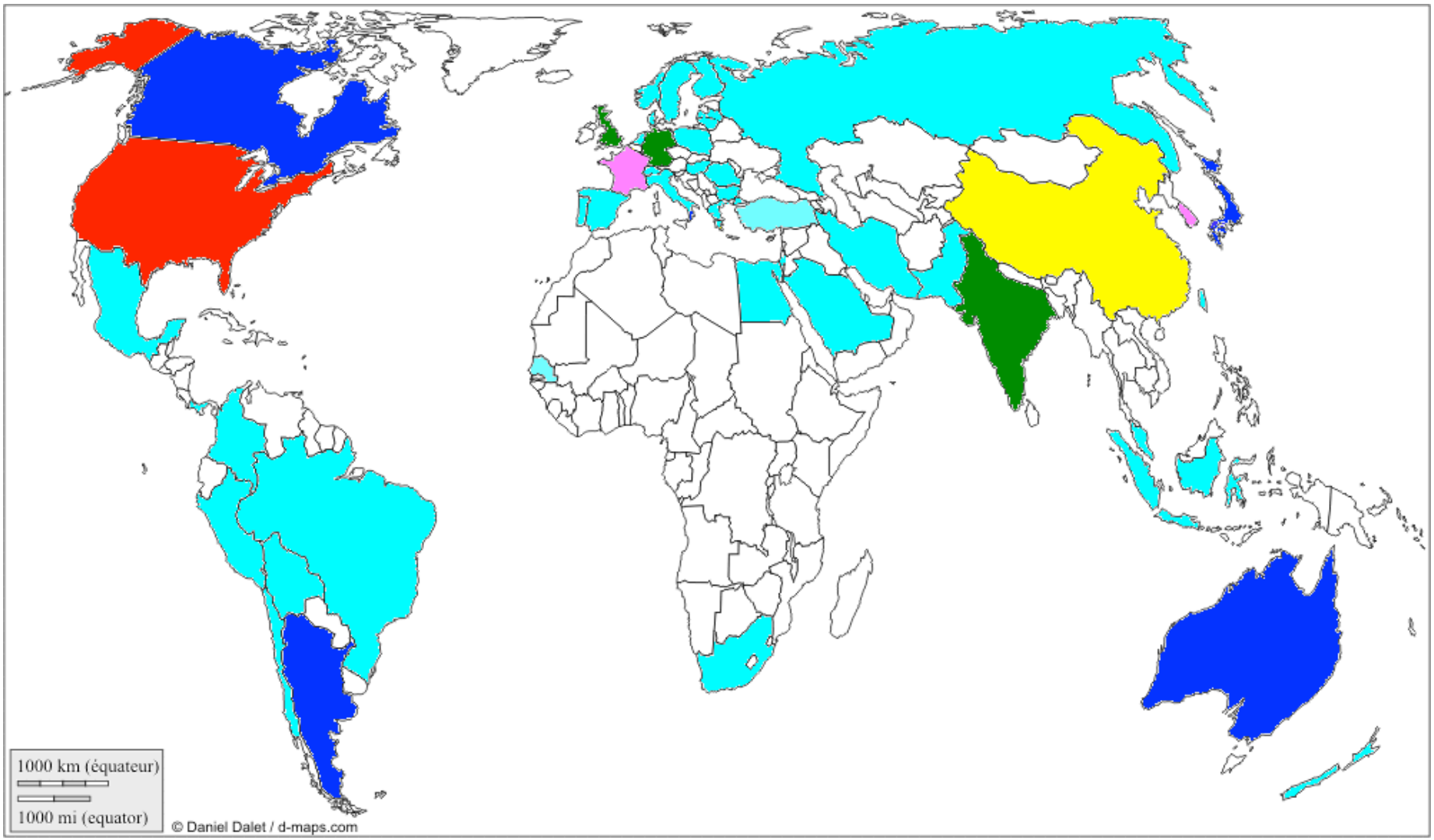
(*June 2010 – March 2014)*



User Affiliations



Users by Country (June 2010 –March 2014)



ASDC EOSWEB UPDATE

eosweb.larc.nasa.gov

EOSWEB Update

- ASDC deployed a redesigned EOSWEB website April 8, 2013
- Since then, the team has made several improvements to the site
  - The main improvement that affects CERES is a change in the way EOSWEB displays Tier 1 and Tier 2.

- Process notes:
  - The EOSWEB team updates the CERES End Dates each week, based on data ingested the previous week.
  - Having one point of contact email (eosweb-content@lists.nasa.gov) has really helped in response time and assured that when the main point of contact is out of the office, a back up person is there to respond in a timely manner.
  - Over a hundred CERES related EOSWEB tickets have been resolved in the last year.

EOSWEB Update

Status

- Ongoing effort to incorporate enhancements to website
- Significant interaction with CERES team (D. Doelling, P. Mlynczak, N. Loeb) since initial deployment to tailor data informational pages

CERES Updates

- CERES data info pages reflect 4 tier design
  - Tier 1 – Level (1, 2, 3, 3b)
  - Tier 2 – Processing Stream Name
  - Tier 3 – Product Name
  - Tier 4 – Filename

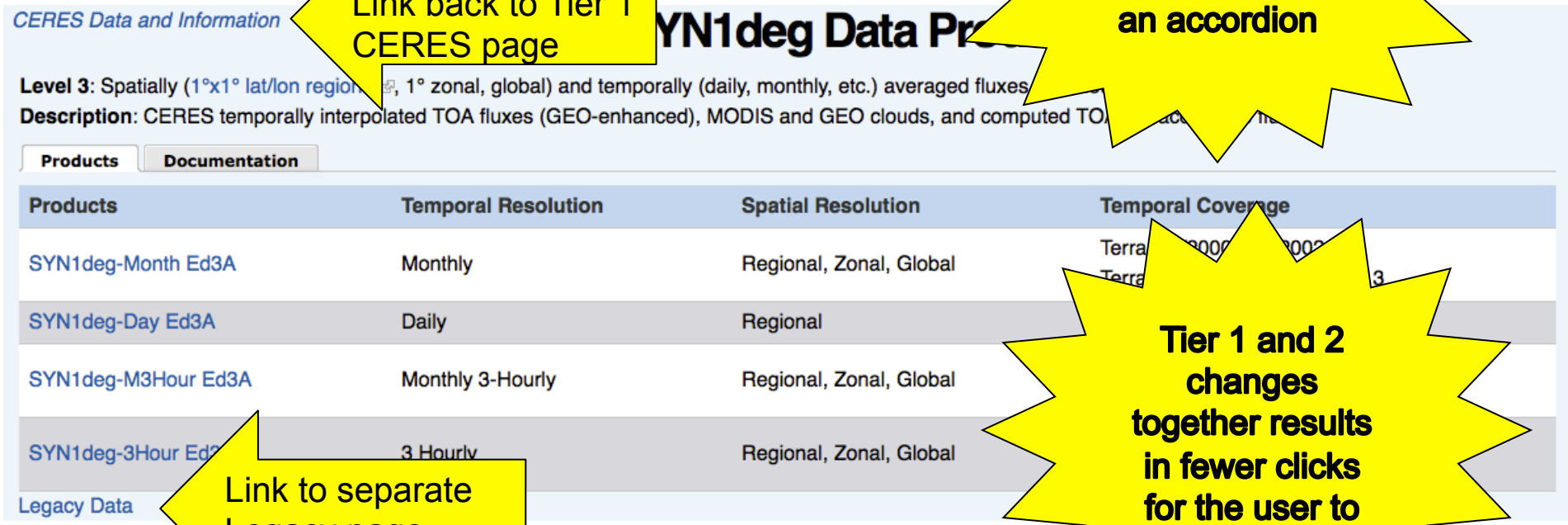
Has been updated

Has been updated

EOSWEB Update

Example - Tier 2 – Stream
Each stream contains data products. Prod
temporal and spatial resolution vs

Before:



Link back to Tier 1 CERES page

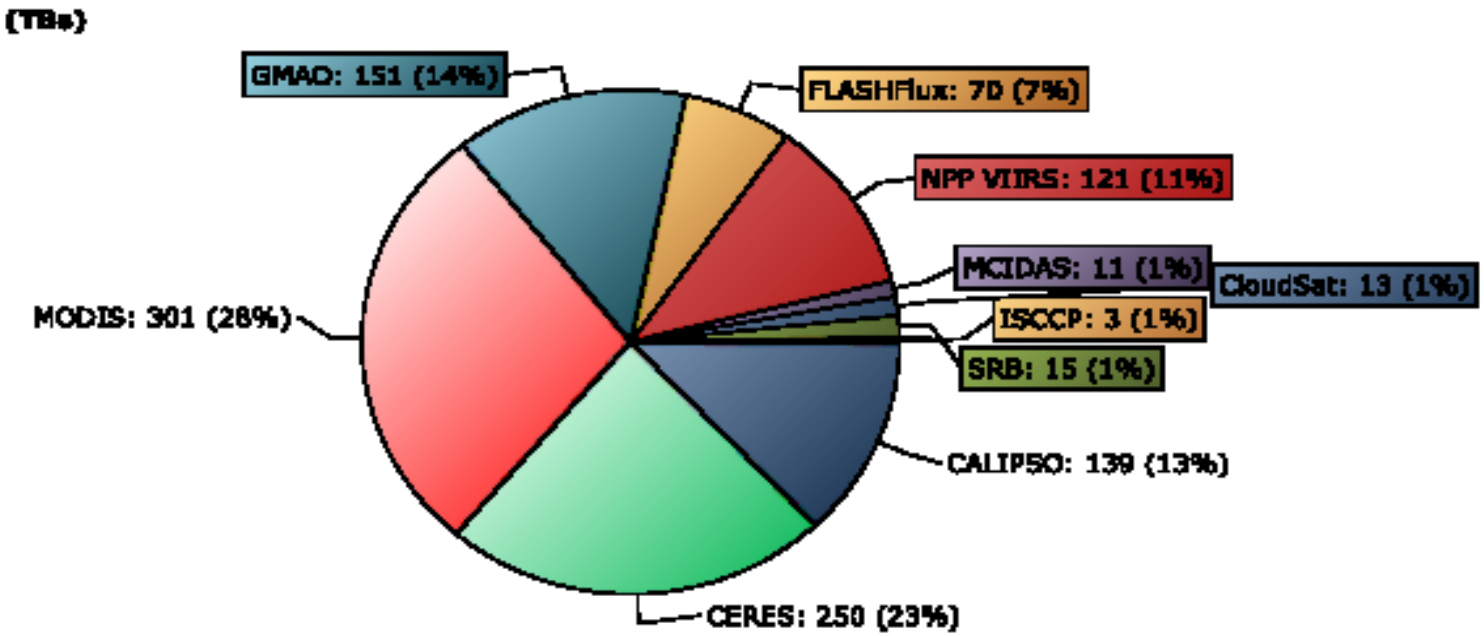
Tier 2 now a separate page, instead of inside an accordion

Link to separate Legacy page

Tier 1 and 2 changes together results in fewer clicks for the user to get to the data

DATA PRODUCTS ONLINE (DPO)

Data Products Online (DPO)



- Access by ASDC Data Production systems & SCF Interactive & Compute servers
- Available to all AMI Users desktop systems over LaRC campus network
- Possible to process very long data streams without staging data from tape archive

Data Products Online (DPO)

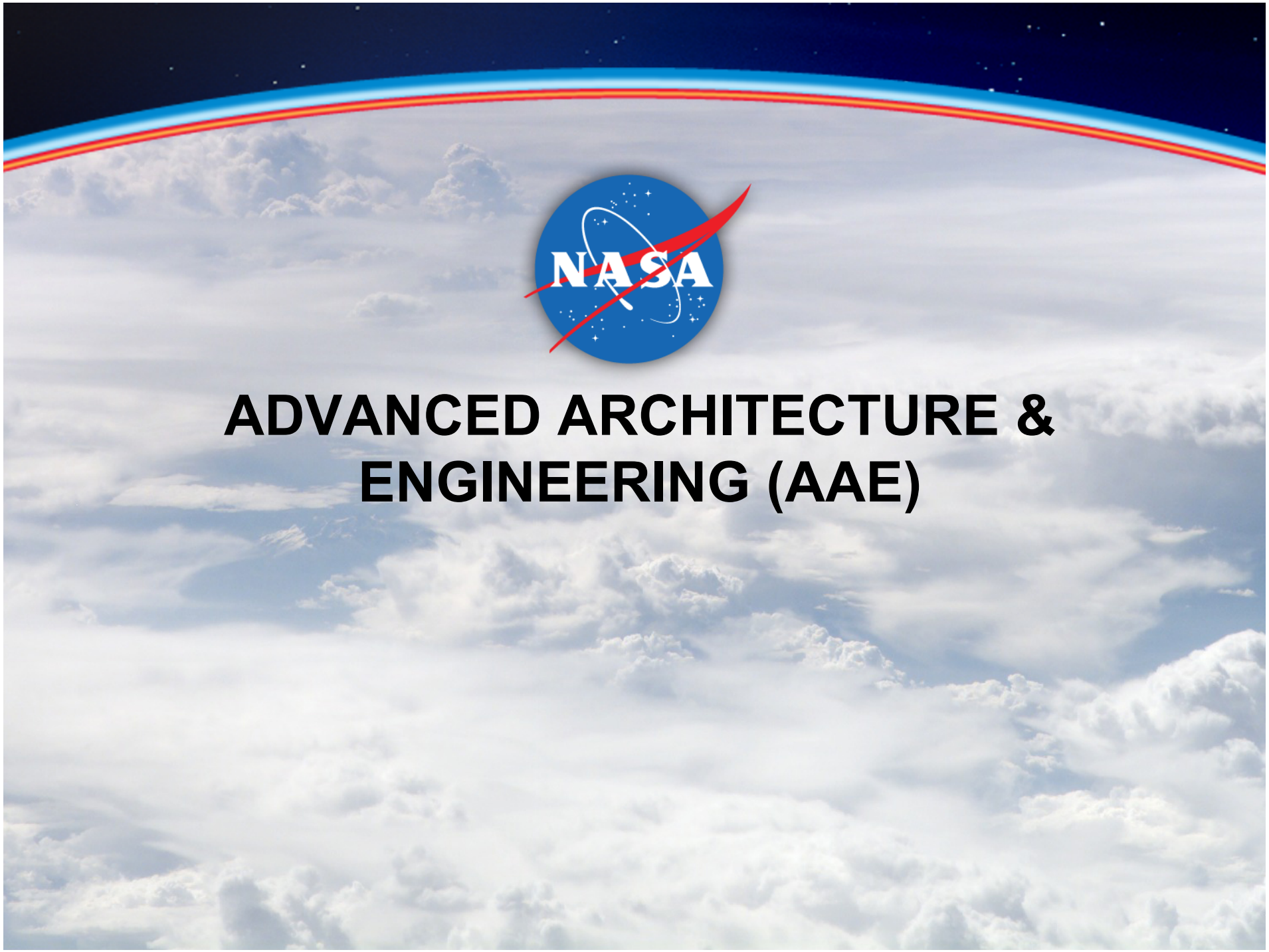
- Original DPO (~ 900 TB) deployed 2008
- Early 2013 added 524 TB new storage to DPO and migrated ~200 TB MODIS data off older disks
- Late 2013 added 1 PB new storage to replace original disk systems purchased in 2008
- In January 2014 encountered major disk problem (old DPO) while migrating CERES data to new storage
  - Most of CERES data on DPO was not accessible or corrupted.
  - Worked closely with CERES DMT to identify highest priority CERES data to restored to new DPO storage as soon as possible.
  - Sets identified as caterory1, category2, and category3-STM subset have been restored and verified. Remainder of category3 in progress. Expect to work category4 next.
- CERES data in DPO = ~250 TB (10.3 million files)

NEW IBM HARDWARE

New IBM Power 7+ and Intel Processors

IBM PureFlex System

- Eight Power 7 Compute Nodes (128 cores)
  - 16-core 4.1 GHz POWER7+ Processor
  - Targeted for running Clouds PGEs
- Four Intel Xeon Compute Nodes (64 cores)
  - 2 x Intel Xeon 8-Core Processor Model E5-2690 2.9GHz
- Testing and integration to begin early summer
- New hardware will support increased levels of CERES production processing facilitated by running more PGEs via CATALYST



ADVANCED ARCHITECTURE & ENGINEERING (AAE)

Advanced Architecture & Engineering (AAE)

iRODS (integrated Rule Oriented Data System) Pilot

iRODS is an open-source data management software capability in use at research centers and at many gov agencies. It provides a mechanism for federating data bases for mash-ups and fusion between multiple products and DAACs, policy-based data management for "smart" stewardship, subsetting, conversion of file formats, and even some authentication.

Accomplished:

- Initial federation between GSFC & ASDC stood up
  - Sharing CERES data products (FLASH/ISCCP/SYN/SSF/EBAF)
- Bi-Weekly meetings are held w/ NCCS to ensure project stays on schedule and any issues are resolved immediately

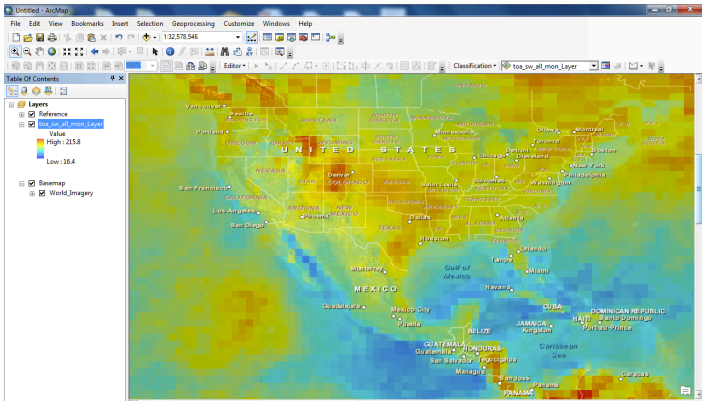
In Progress:

- Continuing to add data products
- Updating to new release
- Integration and testing with EOSWEB

Advanced Architecture & Engineering (AAE)

Geospatial Analytics Capability

Esri ArcGIS provides geospatial technologies to enhance new user access and analysis



Accomplished:

- Drafted a guide for loading NetCDF files in ArcGIS for Desktop
- Server setup and configured for testing access to OGC WMS/WCS using ASDC datasets

In Progress:

- Coordination with science teams on grants/proposals (A36 win with Paul Stackhouse)
- Working with Esri to address issues when loading HDF files, which uses GDAL library
- Working with Esri to support multidimensional WMS/ WCS
- Integration and testing with EOSWEB

Advanced Architecture & Engineering (AAE)

ODISEES (Ontology-Driven Interactive Search Environment for Earth Science)

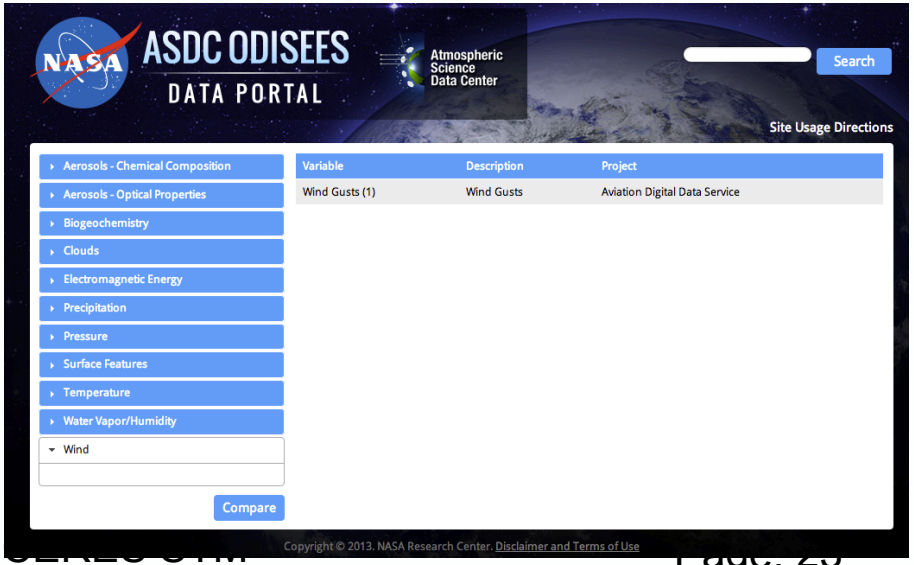
ODISEES provides a capability to highlight the different contexts that numeric data values were derived and can help explain potential differences in values using an ontology

Accomplished:

- Generated RDF metadata for CERES parameters (includes all currently available CERES data sets)
- Completed prototype for the parameter based search application

In Progress:

- Ingest tool to extract metadata
- Including more datasets
- Integration and testing with EOSWEB



Advanced Architecture & Engineering (AAE)

OPeNDAP

OPeNDAP provides subsetting, dataset aggregations, and conversion to/from various data formats

Accomplished:

- Server setup and configured with access to both ANGe and ECS data holdings

In Progress:

- Addressing performance issue with public vs. private data
- Integration and testing with EOSWEB

Cloud Computing

Provides a capability for scalable, on demand computational power to store and process data

Accomplished:

- Cloud bursting proposal with AMES and JPL started
- Participation in Cloud Computing ESDSWG
- Supplied Initial draft of System Security Plan to OCIO for incorporation into Center protective measures

In Progress:

- Identifying architecture requirements for implementing Hadoop